Photosynthesis and Respiration Objective Sheet

**Tested Objectives**

Bio.4.2.1 Analyze photosynthesis and cellular respiration in terms of how energy is stored, released, and transferred within and between these systems.

**Essential Vocabulary (ALL must be defined for full credit)**

photosynthesis, cellular respiration, reactant, product, ATP, energy, aerobic, anaerobic, fermentation (lactic acid / alcoholic), chloroplast, stroma, granum, cristae, mitochondria, light dependent reaction, light independent reaction, glycolysis, Kreb’s Cycle, electron transport chain

**Statements to Master (ALL must be defined for full credit)**

1. Summarize the goal of photosynthesis
2. Summarize the goal of cellular respiration
3. Explain the equation for photosynthesis, identifying reactants and products.
4. Explain the processes for the light dependent reaction and the light independent reaction. Be sure to include location, reactants, and products. (Table provided)
5. Discuss the need for organisms to break down the food that they have produced (autotrophs) or have taken in (heterotrophs) in order to produce an energy molecule that cells can use for energy
6. Explain the equation for cellular respiration, identifying the reactants and products.
7. Identify the organelles in cells where photosynthesis and cellular respiration occur.
8. Differentiate between aerobic and anaerobic respiration (fermentation) and explain why more energy is produced in aerobic respiration.
9. Discuss the types of living organisms that are likely to carry out aerobic vs. anaerobic respiration.
10. Identify the three reactions that occur in aerobic respiration. Be sure to include how many ATP molecules that produce. (Table provided)
11. Discuss the types of organisms that produce lactic acid vs. alcohol when using anaerobic respiration.
12. Identify factors that affect the rate of photosynthesis or cellular respiration, including amounts of reactants, temperature, light, and pH.
13. Explain how energy is stored in ATP, and how ATP can be recycled.

